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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—The Defacement of Scenery ... 577
Llewellyn Park. (With figure.) ... 578
Notes of a Summer Journey in Europe.—XIX ... *J. G. Jack.* 578
Botanical Notes from Texas ... *E. N. Plank.* 579
NEW OR LITTLE-KNOWN PLANTS:—Prunus tomentosa. (With figure.) .. *J. G. Jack.* 580
FOREIGN CORRESPONDENCE:—London Letter ... *W. Watson.* 581
CULTURAL DEPARTMENT:—The Cherries of North-eastern Europe, *T. H. Hoskins, M.D.* 583
Winter Protection ... *E. O. Orpet.* 584
Flowers in the Conservatory ... *T. D. H.* 585
Orchid Notes ... *M. Barker.* 585
Notes from the Harvard Botanic Garden ... *M. Barker.* 585
CORRESPONDENCE:—A Spurious Elæagnus longipes ... *N. A. Lindsey.* 586
Flowers at Wellesley ... *Casual.* 586
The Use of Cultural Directions ... *G.* 587
Horticultural Education ... *Professor L. H. Bailey.* 587
NOTES ... 587
ILLUSTRATIONS:—Prunus tomentosa, Fig. 99 ... 581
Main Entrance to Llewellyn Park, West Orange, New Jersey, Fig. 100 ... 583

The Defacement of Scenery.

A FEW days ago *The Tribune*, of this city, published a letter from a correspondent whose sensibilities had been outraged by the sight of a staring advertisement painted on the face of Storm King, on the Hudson. The writer desired to know whether there was no body organized for the purpose of stopping vandalism of this sort, and he was informed that no such association existed, although a law had been enacted in this state which made the defacement of scenery a misdemeanor, punished by fine or imprisonment. But laws, however stringent their provisions, are of very little avail unless they have strong public opinion behind them, and the great mass of our people do not seem to resent it as a personal injury when the natural beauty, which it is their right to enjoy, has been marred or obliterated to serve some private purpose. Not long since, within the limits of this city, and on grounds controlled by the Park Department, the rocks were covered with violent invitations to purchase somebody's stove polish and to swallow a particular kind of liver pill, and no protesting voice was heard. Our public highways and pleasure-grounds, as well as private places, are amply protected against invasions of this sort, but public officials and private owners rarely assert their rights. It is a misfortune that there are men who are willing to make every pleasing prospect hideous for the sake of advertising a nostrum in which they have a proprietary interest. It is a much more disagreeable fact that the public sentiment on this subject is so feeble that no effective protest is made against it.

The same number of *The Tribune* which contained the letter spoken of also contained a paragraph to the effect that the higher slopes of Greylock Mountain were being rapidly stripped of their forest-growth, and that the inhabitants of the surrounding region were distressed because the mountain views were thus robbed of their attractiveness. It was also stated that the portion of the mountain thus denuded was owned by some association and held as park property. We know nothing of the facts of the case, but everybody knows that destruction of this sort is going on almost everywhere where there is a mountain or a forest, and that the men who are sweeping away these woods are turning scenes of beauty into scenes of desolation more rapidly and completely than this can be achieved with an advertiser's paint-pot. Now, it is not to be hoped that all our forests can be left standing to satisfy the æsthetic sentiment of a portion of the community. Lumber must be had from some source, and men who own timber-trees have a perfect right to sell them for economic use. At the same time it is undeniable that many places could be named where, even in a pecuniary sense, the trees are worth more to look at as they stand than they will be after they are sawed up into lumber. We have so often spoken of the money value of attractions of this sort that there is no need to enlarge upon the subject, but it may be added that there is no reason why certain forests should not be worked so as to yield the highest product possible and yet retain their beauty as portions of the landscape.

The simple truth is, that few persons ever think of natural beauty as a possession worth considering by "practical" men, much less as a public possession which it is a patriotic duty to preserve and transmit to posterity. Few persons look upon the natural landscape-beauty of the country as a factor in promoting mental and spiritual health, as well as a source of elevated pleasure. And yet it is strictly true that this is one of the functions of beautiful scenery, and if the people hold any inherited rights in blessings of this sort, the destruction of such beauty is a public offense akin to that of poisoning the free air or polluting the general water-supply. An occasional spasm of indignation against the advertiser's agent who irreverently lifts his hand against a few stones and fences may be an encouraging symptom, since it shows that there does exist among us a slumbering sense of the right of the people to the enjoyment of natural beauty. But, after all, the advertising-man is a petty offender when compared with many great corporations. What wealthy company was ever known to make the slightest effort to protect the scenery from unnecessary defacement in locating or constructing a railroad? What corporation ever takes thought to preserve the fair face of nature from needless scars when opening a mine or working a quarry or building a factory? How many lakes in the Adirondacks, and how many reservoirs elsewhere, are surrounded by a fringe of death, as the water has risen and drowned the roots of the trees on their banks, and who took any thought to prevent this hideous and depressing effect when the dam was built?

Of course, civilized man must have mines and quarries, reservoirs and railroads. Constructions of this sort necessitate some displacement of the elements of beauty in scenery; but they need not inflict frightful and incurable wounds, and if their owners and builders had a proper respect for the rights of others the defacement would in most cases be trivial. Works of this sort could often be made, under artistic direction, to beautify rather than disfigure the scenery, so that each generation would leave the earth to its successors a more attractive place for human habitation. Societies for preserving natural beauty have been formed in more than one European country, and they will be organized here with increasing enlightenment. They are needed for wider duties than the protection of the unparalleled grandeurs of Niagara from vulgarization or the preservation of the forest-crown of conspicuous mountains like Greylock, or the rescue of Storm King from vandal hands. Their success must grow out of a general appreciation of the value of all scenes of natural beauty as a public possession. Is it too much to hope that the time will come when a wanton or needless destruction of the natural beauty of the world, which is our common heritage, will be treated as a gross offense against public decency, and when such an offense will be considered as truly a felony before the law as any other invasion of the natural rights of the people?

Llewellyn Park.

LLEWELLYN PARK has an historical interest from the fact that it was the first attempt on a considerable scale to organize what has been called a "residence park"—that is, an area of ground which is treated as a unit from the landscape-gardener's point of view, and yet is divided up among various property-owners, each one of whom owns his plot, but under certain restrictions in regard to its relation to the whole. Llewellyn Park was admirably situated for an experiment of this sort, and it was conceived and planned by a man who had not only a passionate love for nature but also a genius for organization. This man was Mr. Llewellyn S. Haskell, who saw the possibilities offered by the south-eastern slope of the Orange Mountain, which is adjacent to the city of Orange, and from which the greater cities clustered around New York harbor can be seen, and almost heard, and yet contains passages of untamed beauty and sylvan picturesqueness which are most refreshing to city-wearied senses. Mr. Haskell began to secure land as long ago as 1853, and he soon had possession of six to seven hundred acres in one body, extending from the level at the base of the mountain to its summit. Some of the land was rugged, and some forest-clad, although the hard features of most of it had been softened by cultivation for many generations. The prospects toward the south and east are magnificent in their extent and variety, while the land itself was made unusually attractive by a sunny exposure, diversified surface and fertile soil.

This park was divided up, and sections of it sold to persons who wished to have homes amid country surroundings. The land was conveyed to each resident in fee-simple, but he was restrained from erecting factories or other structures offensive to his neighbors, and he was under obligations to contribute to the general maintenance of the park. Some ten miles of admirable roads, with bridges and other necessary constructions, were made. There are several entrances, the principal one being the subject of our illustration on page 583. The skill with which this has been designed and constructed is a fair sample of the quality of the work throughout the park. One of its most beautiful natural features is a ravine which traverses its entire width to the very summit of the mountain. Through this runs a happy little brook, and the land on both sides of it, amounting to some fifty acres altogether, is held as the common property of all the residents of the park, and is to be reserved for all time as a general pleasure-ground. To maintain this "Ramble," with the roads, road-borders, walls, bridges, etc., an annual tax of ten dollars is levied on each acre of land.

Mr. Haskell died before his plans were fully realized, and the park is not yet thoroughly occupied and improved. It is, however, a place of rare interest and beauty. It perhaps contains no primeval forest, but there were many stately trees here when Mr. Haskell obtained possession, trees more than a century old, and those which he planted have already attained sufficient size and age to give them dignity. In all parts of northern New Jersey the natural forest-growth is very rich in species, and examples of nearly all of the trees which are native in this vicinity are found within its boundaries. Oaks of several species, Chestnuts, Hickories, Maples, Tulip Poplars and Beeches, many of them trees of magnificent proportions, are especially abundant, and the extent of forest and thicket is still sufficient to invest the park with a woodland charm in spite of the many residences, more or less pretentious, within its borders. Indeed, the number of these buildings could perhaps be doubled without destroying its rural and sylvan beauty.

Llewellyn Park is old enough to have a history. Children who were born in it are now living there with families of their own, and there seems to have grown up such an attachment to the place among the residents as men only have for their homes. Their gratitude to Mr. Haskell for his conception and its fulfillment has been expressed in the form of a bronze portrait-bust, erected in his honor near the entrance. It is easy to conceive that a community of persons who appreciate the advantages of such an arrangement and enter heartily into it might persistently adhere to its original purpose. If such a park was originally well planned, and if a competent superintendent, who sympathized with its aim, could be had to insure its maintenance, its beauty and usefulness would steadily grow as it matured toward the realization of its design, and it would be an ideal place of suburban residence. But as time passed new owners would have to be admitted to the circle—families with different tastes and preferences—so that at last it might be possible to have the park filled with people who cared only for that portion of the land which they owned, and took little interest and no pride in the scheme as a whole. Parks somewhat similar to this in character have been of late years established in various parts of the country, and it would be instructive to know something of the lines upon which they have developed and how nearly they are fulfilling the purposes of their founders. The problems in social science which are here presented are still more intricate than those in landscape-architecture, and we should be grateful to any reader who has had experience in the practical working of such organization for a statement of facts in the case.

Notes of a Summer Journey in Europe.—XIX.

A WEEK spent among the living collections at Kew, and devoted almost entirely to the woody plants outside, with scarcely a glance within the greenhouses, is hardly sufficient to gain an intimate knowledge of the rich stores in this botanical treasury; but with well-used time one may acquire some general idea of the place.

Kew is so often written about and described, and Mr. Watson and Mr. Nicholson have given us so many and such full accounts of current events there, that such matters call for no additional mention; but since it has just attained the jubilee, or semi-centennial, year of its efficient reorganization it is worth while, perhaps, to make a hasty sketch of its development.

The early history of Kew Gardens, a good résumé of which may be found in the Kew *Bulletin of Miscellaneous Information* for December, 1891, is interesting as showing how this, like so many other scientific and proven useful institutions, had to struggle through a long series of vicissitudes before its value was thoroughly appreciated by the public and it became properly established on a permanent basis. Until within about fifty years Kew may be considered to have been the private domain of the sovereign, although in the period immediately preceding its reorganization its strictly private character had been gradually diminishing, and it became more accessible to the public and more of a national charge. But even while it formed a part of the royal estates it was famous in the botanical world of the day, for it was under the superintendence of such men as the Aitons, and for a long time Sir Joseph Banks may be considered to have been the director in fact if not in name. The celebrated William Turner, who died in 1568, has left a record of having had a garden at Kew, but of this nothing is really known.

The beginning of a collection on the present famous site is said to have been made soon after the middle of the seventeenth century by Lord Capel, a brother of Lord Essex, who introduced a large number of kinds of trees and shrubs from France. Some of these were probably fruit-trees, and very likely some came from the famous "potager," or Royal Kitchen Garden, at Versailles, which was established at about the same time. In accounts published in the latter part of the seventeenth century we read of Capel's beautiful and well-kept orangery and myrtetum; his Lentiscus-trees, for which he paid £40; his trimly shaped white-striped Hollies, which cost him £5 each, and his flowery and showy Laurestinuses trimmed to equal regular size.

"About the year 1730, Frederick, Prince of Wales, obtained a long lease of Kew from the Capel family, soon after which he commenced a fresh arrangement of the pleasure-grounds, which were laid out, and additional plantations made, under the direction of the celebrated Kent, who was also engaged in the decoration of the house itself." This Prince of Wales died in 1751, and his wife, the Princess Augusta of Saxe Gotha, who died in 1772, is said to have given to Kew Gardens, during the

last years of her life, "the definitely scientific character which they have ever since retained." In 1761 a large hot-house, 110 feet long, was designed and erected by Sir Wm. Chambers, and it was at that time the largest in the country. It was taken down in 1861, or just one hundred years afterward.

After the death of the Princess Augusta Kew Palace and the grounds passed into the control of George III., who is credited with having strictly maintained the botanical character of the establishment which had been begun by his mother. About this time Sir Joseph Banks began to figure in affairs at Kew and his name to become familiar in botanical literature, and especially with regard to the introduction of many plants until then unknown to the science of botany or in cultivation. Largely owing to this gentleman's liberality with his time and money, the gardens soon took a leading place among all such institutions in Europe, and, although its standard appears to have varied in later years, Kew began to be looked upon as a Mecca by botanists and gardeners. The efficiency and eminence of such gardeners as the Aitons at Kew helped to make its treasures widely known and appreciated. William Aiton, in 1789, published his *Hortus Kewensis*, or catalogue of plants in the Royal Gardens at Kew, a work including some 5,500 species, a brief description of each, its native country, date of introduction and introducer being given.

In 1772 the first regular collector was sent out from Kew, the collector in question being Francis Masson, whose destination was the Cape of Good Hope, and who was instrumental in introducing hundreds of species, some of which were collected in other fields besides those of South Africa. From this time the treasures of numerous collectors found their way to Kew, and thence were distributed to other parts of the kingdom or to colonies abroad.

That portion of the grounds in which a collection of trees was established was at first quite small, only a few acres in extent, although some interesting trees were also planted outside of it. It is curious to note how some of these early-introduced plants were first treated, their character in regard to hardiness not being well understood. For instance, a fine specimen of the Japanese Ginkgo biloba was originally trained against a wall. One of the largest and best accessions to the collection of trees was obtained from the garden of the Duke of Argyle, at Whitton, in 1762 or 1763. These trees had been raised from seed many years before by the tree-loving Duke. They were transplanted to a part of the Kew grounds not now designated the Arboretum, but several of the specimens are still standing where they were placed 130 years ago.

The Arboretum proper, as it exists at present, includes about 178 acres, which, until within recent times, or, more precisely, until 1850, was simply a sort of pleasure-ground and game-preserve. Since that time it has been planted with trees and shrubs grouped with regard to botanical sequence according to modern classification. The comparatively small size of many of the exotic trees is likely to prove somewhat disappointing to those persons who have come to think of Kew Gardens, as a whole, as a very old institution. The fact is, that the territory has been acquired gradually. With new accessions of land and changes in the management, alterations and modifications of plans and planting have seemed necessary, in order to give the whole establishment a regularly arranged aspect instead of the heterogeneous aggregation which it otherwise would present for all time. As it is now probable that no material additions to the area will be made, or, at least, be absolutely necessary, the trees are likely to remain in their present positions and grow without further molestation.

Besides the 178 acres called the Arboretum, the Botanic Garden proper includes about seventy acres, so that the whole establishment at present comprises very nearly 250 acres, an area requiring a good deal of time to go over so as to thoroughly appreciate the collections planted upon it. The situation is not the most advantageous for the finest development of tree-growth, because the soil is mainly of a poor, sandy or gravelly character. But while there is a lack of natural fertility, a partial compensation may be found in an abundance of moisture, both in the general humidity of the atmosphere and the low-lying situation of a good portion of the ground, which is not very much above the high-water of the Thames, which bounds it on one side. Certain portions of the garden are said to have been formerly covered by ponds or lagoons, and the site of the large Palm-house was once covered by an extension of the same sheet of water which now lies in front of it.

Since its reorganization in 1841 Kew has successively been presided over by three directors: first, the late Sir W. J. Hooker, followed by Sir J. D. Hooker, and lastly, Mr. W. T. Thistleton Dyer, who has succeeded in the care within a few years. The institution is supported by the Government by an annual appropriation, which nearly amounts to a hundred thousand dollars. After a certain number of years of faithful service the employees are entitled to retirement with a pension.

Kew has accomplished, and is accomplishing, four distinct and valuable objects. It is acknowledged by all the world as the headquarters of botanical science; it has been and is a centre of economic botany, by which the colonies in all parts of the globe have especially benefited; it is practically a great school of botany and horticulture, where instruction is given in all matters relating to plant-life, both on its useful and æsthetic side, and it is a place of rest and quiet to hundreds of thousands who visit it every year.

Arnold Arboretum. *J. G. Jack.*

Botanical Notes from Texas.

WACO is in central Texas, just at the ninety-first meridian, and in latitude about 31° 20′. The city is in the valley of the Brazos River, which, though nearly a thousand miles long, is entirely within the limits of Texas. The city takes its name from the Waco Indians. Here their principal chief resided, and here their council-fires were lighted.

About three miles above the city, on the right bank of Bosque River, a little above its junction with the Brazos, there is a high bluff. A projecting point of the bluff is known locally as Lovers' Leap, in accordance with the same old legend which has done duty in connection with many other precipitous places throughout the country; a daughter of the Wacos and her chosen warrior ended their lives and loves when hotly pursued.

Waco is a city of about 20,000 inhabitants. It is chiefly remarkable for the number and character of its artesian wells. Within the city or near it there are twenty-one of these wells, having an average depth of a little more than 1,800 feet, and a flow of from 100,000 to 1,200,000 gallons of water in a day of twenty-four hours, with a pressure at the ground of fifty pounds. The water of these wells, as it flows from the ground, has an average temperature of about 103°.

There have been a few light frosts here, and Cotton-plants are killed; but the gardens are still adorned with the choicest of Roses and Chrysanthemums. Leaves of Elms and of Box Elder and Hackberry are falling, while those of deciduous Oaks and Cottonwood and other species are taking on their handsomest autumnal tints, and in striking contrast with the unscathed bright green leaves of the Live Oak. Dripping Springs is on the left bank of the Brazos, about four miles above the city. For a long distance water continually drips from the rocks of the bluff about as it drips from the eaves of a building during a heavy rainfall. The handsome Adiantum Capillus-Veneris is there, pendent in great profusion from the rocks amid the falling drops of water. This almost cosmopolitan Fern is very abundant thoughout central Texas; it fringes most of the irrigating ditches at San Antonio, and large and beautiful individuals crowd each other upon the moist rocks along Colorado River at Austin.

Hackberry is the most common street and lawn tree of Waco. I have noticed that "northers" have a killing effect upon China trees, even in this latitude, as the dead tops of many of them show. The drupes of this species are poisonous, at least to birds. Robins often eat them until they become intoxicated and tumble from the trees.

Several species of Aster are yet in blossom, with an occasional Helenium, and rarely the handsome flowers of Gilia coronopifolia are to be seen. Centaurea Americana is so abundant in many localities in central Texas as to become a weed. It is often seen in gardens, where its beauty entitles it to be. It extends northward throughout the Indian Territory.

Several species of Desmanthus abound in this region, among them D. leptolobus. This species extends northward in Kansas to the Saline River, or to beyond the thirty-ninth parallel. In early spring hill-sides here are covered with such eastern species as Erythronium albidum, Anemone decapetala and others, which mingle their beauty with the western Lupinus subcarnosus and many more decidedly western species. Our little Dichondea repens, too, is here. Heteranthera graminifolia is common in running waters of central Texas. It is very abundant in Colorado River at Austin. I saw it also in Llano River near Llano. This rather pretty aquatic has a more western range than is usually allowed it. I have collected it near the one-hundredth meridian in Kansas, and it probably extends still farther westward in this state.

Waco is the most northern station at which I have seen Capsicum baccatum, "Chiltapin" of Mexicans, growing without cultivation. The intensely acrid berries of this species are exten-

sively used by Mexicans as a condiment. That fact might excite no surprise. But birds are fond of them. Even mocking-birds eat them with avidity, and without injury to their vocal organs. Wild turkeys, too, use them in the fall, until they are literally seasoned by them, affording us most excellent natural "Chile con carne."

Acacia Farnesiana is rarely seen here, though it is one of the commonest shrubs or trees of southern Texas. It extends into the other Gulf states and far southward. So far as the observation of the writer has extended, this species attains a larger size than any other Texas species of the genus. I saw a tree of this species felled last summer in Victoria that was about eighteen inches in diameter and thirty feet or more tall. It is a handsome sight in blossom, covered with thousands of little globes of small, very fragrant, yellow flowers. About the first of last January, at Goliad, I saw such a tree in full blossom. Apostaxis occurs largely in this species, as it does in most of its congeners, and also in Mesquit. These gums possess, probably, properties similar to those of gum Arabic, for which they may prove to be a valuable succedaneum.

Parkinsonia aculeata, "Ratama," or Jerusalem Thorn, is also here in gardens and as an escape. Its light graceful sprays and foliage and handsome yellow flowers, which are produced from May to November, make it a popular lawn tree throughout the south and as far north as it will thrive. Diospyros Texana, Black Persimmon, or "Chapate," grows on the bluff at Lovers' Leap. The species is very abundant from this meridian far westward. It may be seen, sometimes, not more than three or four feet tall, profusely covered with its small black fruit, and through all degrees of height, until it becomes a tree of middling size. The largest individuals that I have seen were on the bluffs of the Arroya near Beeville. Those were at least a foot in diameter and thirty-five feet tall. The fruit of this species is sweet and less astringent than that of its more northern congener, but it, pulp and all, is so intensely black, that in eating it the lips and fingers become of such a black-inky hue that it is not so generally eaten as the fruit of our other species, which also is found in this vicinity. The wood of D. Texana is very hard and close-grained and of economic value when such qualities are required of wood. Professor Sargent tells us that for engravers' blocks it is the best American substitute for box-wood. The bark of this tree exfoliates, and, when unleaved, the tree closely simulates in size, height and habit the cultivated Crape Myrtle (Lagerstrœmia) when that plant is defoliated. The leaves of this species are small, oblong, thick, and with recurved margins. In the southern part of its range they persist until crowded off by the new growth.

Berberis trifoliolata, Currant, "Agrita," is one of the most interesting and important shrubs of western Texas. This Barberry is rarely found so far eastward, but I saw a few individuals on the bluffs of the Bosque. In southern Texas it blossoms as early as February and ripens its red fruit in May. The fruit, about as large as currants, has an agreeably acid flavor and is largely used for pies, jellies and preserves. The shrub may be easily recognized, even when destitute of flowers or fruit, by its glaucous evergreen leaves, which are variously cut and armed with spines. Its cultivation on an extended scale is desirable, as western Texas has no other early spring fruit which, green or ripe, will fill the place of this one.

Sophora secundiflora is rarely met with at Lovers' Leap, becoming very common farther westward. Usually a shrub, it occasionally becomes a respectable tree. Differing largely from our other native species, it produces large violet-colored flowers which are succeeded by large, often constricted, woody pods, each containing from one to half a dozen red, roundish, large seeds, which are said to be very poisonous. I have made no experiments to ascertain the truth of this charge. The seeds are easily polished, and are then quite handsome. Devout Mexicans use them in making the bead-rolls by which they tally their prayers. Growing with S. secundiflora sometimes, but oftener along streams in central Texas, is S. tomentosa. It is a small tree, with green bark, yellow flowers and small moniliform pods in lavish profusion. The seeds are blackish, small, and embedded in pulp. The eating of a portion of the pulpy fruit did not kill the writer.

Bumelia lycioides is abundant throughout this region. Its black oblong drupes are edible. The largest trees of this species that I have met were near Caldwell, Kansas. They were forty feet tall or more and a foot in diameter. The West Indian Cassia occidentalis is common in the streets of Waco. The odd Eryngium Leavenworthii is almost everywhere among limestone-rocks. This species is often mistaken by botanical tyros, sometimes for a Teasel, oftener for some Cnicus. Our species extends through the Indian Territory to Kaw River, in Kansas. When about to celebrate the nuptials of its flowers, the whole plant shares in the festivities of the occasion, and, laying aside its plain green gown, attires itself in royal purple.

Cucumis anguria, which yields the gherkin of commerce, is often seen wild in this state. The fruit might be raised here without limit. The wild grapes would furnish the vinegar, Chiltapins the peppers, and Texas might supply the world with pickled gherkins.

Waco, Texas. *E. N. Plank.*

New or Little-known Plants.

Prunus tomentosa.

THIS little Cherry has been introduced into cultivation at several widely separated stations in North America, and in the coldest region where it has yet been tried it appears to be quite hardy and vigorous. It has flowered and fruited for some years at the Arnold Arboretum; and on the grounds of the Iowa Agricultural College at Ames it is reported as withstanding perfectly the rigorous winters, its fruit-buds being hardy and its flowers enduring quite severe frosts without injury.

The species is a shrub and never attains anything like tree-form. Apparently mature plants at the Arnold Arboretum are only six or eight feet high, while it is described in accounts of it in its native habitat as from five to ten feet in height. It forms a broad, spreading, twiggy bush of numerous stems rising from the ground and clothed with branches to the base. These lower branches, where they touch moist ground, often send out roots and form independent plants. The bark is a gray or bronzy brown, at first comparatively smooth, but finally scaling off laterally in very thin flakes, like the bark of Yellow Birch.

The downy gray young branches are usually thickly covered with buds, from which a profusion of flowers and leaves appear simultaneously in early spring. In this latitude the blossoms begin to open soon after the middle of April, and they may be counted in best condition about the first week of May. They are smaller than the flowers of the common Cherry, white or light rose colored, usually assuming a distinctly rosy tinge before falling away. They are sessile, or almost so, and are crowded in clusters in the axils of the leaves. The leaves are mostly from one and a half to two inches long, rounded ovate in outline, acuminate, serrate, the serrations being tipped with a sharp point or mucro. They are sparingly hairy on the upper surface and densely and softly hairy beneath. The leaf-stalks are very short, and at the base of each is a pair of slender, laciniate, long, persistent stipules.

When ripe, the cherries average about half an inch in diameter, being round, or somewhat longer than broad. They are slightly covered with very short and inconspicuous hairs, and contain a medium-sized stone. They begin to ripen or change to a light red color in the latter part of June. Later the color becomes darker, and the cherries can hardly be considered to have attained their finest flavor and condition of ripeness until the second week of July. They have a pleasant slightly acid flavor; the flesh is firm and juicy, and without the noticeable staining properties characteristic of some wild cherries and plums. With careful selection and cultivation this little Cherry might prove of some economic value.

Prunus tomentosa is a native of northern China, and the same, or a closely allied, species is found in the high Himalayas of north-western India and in Thibet. It has been described by some botanists under the name of P. trichocarpa, or hairy-fruited Cherry, and plants labeled P. mollis have been received at the Arboretum.

The illustration on page 581 of a fruiting branch is of natural size, from a specimen grown in the Arboretum the past summer. The seed of this plant was collected in the mountains in the vicinity of Pekin, China, by Dr. E. Bretschneider, and was sown in March, 1884. It flowered and fruited in 1888, or earlier, and the bush now has apparently reached its fullest development, although it may attain a little larger size.

Arnold Arboretum. *J. G. Jack.*

Fig. 99.—Prunus tomentosa.—See page 580.

Foreign Correspondence.

London Letter.

A HANDBOOK OF IRIDEÆ.—This is the fourth of the valuable series of handbooks prepared by Mr. Baker, of Kew, and published in the last four years. No botanist of modern times has contributed more to what may be termed garden botany than Mr. Baker, who has always shown a warm sympathy with and interest in horticulture, especially in its relations to systematic botany.

Since Herbert published his great work, *Amaryllidaceæ*, we have not had any book of more value to horticulturists than Mr. Baker's *Handbook of Amaryllideæ*, published in 1888. In the following year came a similar work devoted

to Bromeliaceæ, a most useful book to the few who are interested in these beautiful but hitherto neglected plants. Uniform with these two is the *Handbook of the Fern Allies*, as Lycopodiums, Selaginellas, Equisetums, and the like, and now we have this book, which is devoted to the Iris family. Mr. Baker says it is the last of the series, and that they are the outcome of special attention to their respective subjects since 1866, when he first joined the herbarium staff at Kew, of which he is now the head.

The sister order, Liliaceæ, he dealt with in an exhaustive series of papers published in the Journal of the Linnæan Society, but I feel certain that I speak for a large number of horticulturists in urging upon Mr. Baker the need of a similar work on Liliaceæ to those which he has now produced on Irids, Amaryllids and Bromeliads.

In the classification of the genera and species Mr. Baker has followed the *Genera Plantarum* of Bentham and Hooker with very slight exception.

Iris is limited to 161 species found in the North Temperate Zone, the South African Moræas being still retained as a distinct genus, although there does not appear any good reason for keeping them separate from Iris other than their geographical position. The great "Iris" from Lord Howe's Island, figured in Garden and Forest (vol. iv., p. 355), he places along with the Moræas. Vieusseuxia and Dietes are also sunk under this genus.

There are no less than 133 species of Iris with rhizomatous stems, the remaining twenty-eight species being bulbous. Of the section Oncocyclus twelve species are described, most of which are in cultivation. The beautiful I. Susiana, I. Gatesii, I. Sari and I. Iberica belong to this section, all of them remarkable for the large size and great beauty of their flowers, and perhaps no less remarkable for their refractory behavior under cultivation.

Morœa has fifty-four species. These lovely flowered, easily cultivated plants are not so much cultivated as they deserve to be. We have few more charming flowers than those of the plants hitherto known as Viesseuxias, and almost as much may be said of many of the Morœas proper. M. Robinsoniana is one of the handsomest plants in the whole order.

Marica is a genus of stove-plants as easily grown as Aspidistra and nearly as useful for its foliage effect. At Kew we find the several species of the greatest service in the large houses, their evergreen, dark flag-like leaves always looking healthy, and their habit of producing suckers in abundance rendering them serviceable for planting in the beds or for borders. Mr. Baker describes eleven species, of which the best in cultivation at Kew are M. cœrulea, M. Northiana and M. gracilis.

Tigridia is allowed eight species, of which the best is T. Pavonia, though some of those which are not known in gardens, for instance, T. Dugesii and T. buccifera, are likely garden plants, from the description of them. There does not appear to be any good reason for keeping up T. Pringlei as a species distinct from T. Pavonia.

Crocus had already a splendid illustrated monograph by Mr. G. Maw, F. R. S., but it is too expensive for the garden library. Mr. Baker divides the sixty-six species into three sections, which are again divided into spring and autumn flowering groups. Those who are only acquainted with the ordinary garden Croci, which flower in the spring, will be surprised to learn that of the true species no less than forty-two flower in the autumn, twenty-four only flowering in the early months of the year. C. Susianus, from the Crimea, is the "Cloth of Gold Crocus" of gardens; C. Mæsiacus, or luteus, is the well-known Dutch Crocus, and C. biflorus, the Scotch Crocus. C. versicolor, from the mountains of southern France, is the purplish feathered Crocus so common among spring bulbs, and C. vernus is the parent of the cultivated lilac and white varieties. Mr. Baker places C. obovatus, the Neapolitan Crocus, as a variety of C. vernus. I have before given a list in Garden and Forest of the best of the autumn-flowering species, but I would recommend Mr. Baker's book to any cultivator who wishes to take in hand these beautiful and most useful species with a view to breeding from them a race of as great value in autumn as are the common spring-flowering kinds, a very possible and certainly most desirable object.

Romulea has thirty-three species, among them being some very pretty Crocus-like summer-flowering plants such as R. bulbocodium, R. Clusiana and R. rosea, grown in quantity by the Dutch bulb nurserymen. There are eighteen species of the Australian genus Patersonia, which is represented in a few gardens by P. longiscapa and P. sericea, plants worthy of a place in many gardens. The same remark applies to Aristea, of which there are twenty-seven species, including the pretty blue-flowered A. corymbosa, generally known in gardens under Witsenia.

The Ixias are allowed twenty-four species, but they cross so freely, even in a wild state, that it must be very difficult to draw the line between one species and another, as, indeed, is intimated by Mr. Baker. Freesia is limited to one species with two varieties, alba and odorata.

Watsonia, a genus quite as worthy the attention of cultivators and breeders as its ally, the Gladiolus, is composed of fifteen species, nearly every one of which is cultivated at Kew. There are few more beautiful bulbous plants than W. angusta (in flower now), W. Meriana and its varieties, W. coccinea, W. densiflora, W. rosea and W. marginata. They are as easily cultivated as the common Gladioli, and they flower freely and continuously. There are twenty-seven species of Babiana, all African; seventeen species of Acidanthera, of which, so far as I know, the handsome A. bicolor, figured in Garden and Forest (vol. i., pp. 486, 487) is the only one in cultivation. They, too, are all African.

Crocosma aurea is the accepted name for the plant known as Tritonia aurea, while of Tritonia proper there are thirty-one species, included in which is the plant known in gardens as Montbretia Pottsii, the parent with the Crocosma of a race of most beautiful and easily grown hardy bulbs, which we owe chiefly to Monsieur Lemoine, of Nancy.

Gladiolus comprises no less than 132 species, fifteen of them natives of Europe and western Asia, all the others being African. Of the latter there are fifty-seven species with linear or rush-like foliage, and thirty-seven with ensiform leaves. Comparatively few of these have been introduced into gardens, although many of those not yet tried are evidently worth looking after, and they are generally natives of easily accessible places. Mr. Baker gives the following as the principal of those bred for garden-plants: G. psittacinus (Natalensis), G. cardinalis, G. oppositiflorus, G. blandus, G. tristes, G. purpureo-auratus and G. Saundersii. From these seven species have been obtained the four distinct races of Gladioli, the Colevillei, Gandavensis, Lemoinei and Nanceianus sections.

I have purposely gone into detail that the attention of readers interested, or wishing to be interested, in bulbous plants may obtain some idea of the interesting character of the Order Irideæ and of the way it has been dealt with by Mr. Baker. The whole of the work is in English; good plain English, I might say. The book is published by G. Bell & Son, London and New York.

Zonal Pelargoniums.—American growers of so-called Geraniums may be interested by an account of the way these plants are treated by our best English growers who want them for winter effect. The Geranium, as this section of Pelargonium is popularly named, is emphatically everybody's plant. It will live and grow and flower under the most indifferent treatment, but, like all plants of this nature, it pays for good cultivation. There are not many growers in England who can produce such fine plants, large trusses and large well-colored flowers of Geraniums as Mr. Cannell, of Swanley. Mr. Pearson, of Chilwell, Nottingham, is, perhaps, as clever with them, and the Right Hon. Joseph Chamberlain is a very successful amateur-grower. Mr. Cannell has shown trusses almost as large as a child's head, composed of flowers nearly two inches in diameter. The Messrs. Pearson have long been specially interested in

Geraniums, both as breeders and growers, some of the best of the most popular kinds having originated in their Chilwell nurseries. Mr. C. Pearson was invited by the Royal Horticultural Society to lecture on the cultivation of Zonal Pelargoniums for winter, and the following is a résumé of what he said: People who object to the "glare" of the scarlet Geranium in summer delight in its warmth of color in December and January. The flowers are always useful, but specially so in winter, and they may be made to hold their petals a long time by dropping a little florists' gum in the eye of each flower. This gum is easily made by dissolving a little gum shellac in spirits of wine until the mixture is just thick enough to drop freely from a pointed stick. Dark crimson-flowered varieties, such as Henry Jacobi, are not the best colors for winter, as in sunless weather the flowers are often changed in color to a dull magenta. The best of the crimson-flowered kinds for winter is Charles Smith.

The following is my selection of the best sorts for winter-flowering: White—Queen of Whites, White Lady, Sir Percivale. Blush White—Stella Massey. Pink—Constance, Lady Brook, Ethel Lewis, Amphion. Rose—Beauty of Kent, Rosy Morn, Rev. R. D. Harries, Radha. Salmon—Madame de Bourdeville, Ayesha, Lady Chesterfield, Mrs. Norman. Scarlet—Sunbeam, Swanley Gem, Corsair, J. L. Baldwin, S. Hibberd. Crimson—C. Smith, Nelly Thomas, T. Hayes. This selection may be useful as a guide to those who wish to grow a collection of the best sorts known in England.

The cuttings should be planted in August, and potted as soon as rooted into large thumb-pots, and again into four-inch pots. By the beginning of June they should be put into six or seven inch pots. The plants should then be placed outside in a sunny position, and, if possible, on a thick bed of ashes. All through the summer the plants should be carefully watered, the strong shoots checked by pinching, and all flower-buds picked out as fast as they appear. The leaves should be thinned out severely. No stimulants, such as manure, should be given to these plants. In autumn the plants must be placed under cover, as they are easily spoiled by excessive wet. They should be allowed plenty of light and air, and, if necessary, more leaves be removed as well as the flower-buds.

A low span-roofed house, in which the stages are close to the glass and with a sunny aspect, is desirable for these plants during winter. The atmosphere in the house should be kept fairly dry by means of the pipes and ventilation. The temperature ought not to fall below fifty degrees in the coldest weather, and on mild nights it may be kept five degrees higher. During sunshine a temperature of sixty to sixty-five, or even seventy degrees, is not too high.

The plants should be watered in the morning. For the production of large trusses of flowers the point of the shoot must be stopped just above the bud. It is always best to stop the shoots after the flower-buds show.

The soil used is light loam, with a little cow-manure and sand. Leaf-mold is, Mr. Pearson believes, detrimental to good cultivation.

London. *W. Watson.*

Fig. 100.—Main Entrance to Llewellyn Park, West Orange, New Jersey.—See page 578.

Cultural Department.

The Cherries of North-eastern Europe.

THERE is no more fascinating study to the lover of horticulture than that of the unfamiliar fruits of foreign countries which prove themselves to be particularly adapted to his own country. For upward of twenty years I have been engaged in this study, partly from necessity, because I am too far north and high up to grow the familiar varieties of my youth, but also because I find a real superiority, as well as a greater adaptability, in these novelties over the older sorts with which I had worked for years. While their work among the Apples of north-eastern Europe seems to me of far-reaching importance

to a broad region in northern America east of the Rocky Mountains, Messrs. Budd and Gibb, during their summer's tour in Russia some ten years since, did not neglect other tree-fruits, and a large variety of both Plums and Cherries were imported. Professor Budd's relations, then formed with careful and well-trained pomologists of that region, have resulted in a continuous influx of new varieties. In addition to these he has, by the aid of missionaries in northern China and Mongolia, secured many valuable varieties, and perhaps species, of the tree-fruits of that part of the world. Since then, through his kind aid, I have been enabled to grow and test on my own grounds a large variety of new tree-fruits, the study of which from year to year has occupied much of my time. I am convinced that these interesting researches, while perhaps not bringing quite so much of absolute and striking novelty before us as those of Professor Georgeson, in Japan, are yet of no less importance to the fruit-growers of our continent.

It may be well here to note that while Messrs. Budd and Gibb were for America the pioneer students among the orchards and gardens of eastern Europe, the fruits of that region were by no means unknown in other parts of Europe. The Russian Apples, Pears, Plums and Cherries are quite well known and distributed in north Germany and the Scandinavian countries. It was, indeed, by the way of Sweden, through England, that our earliest importation of Russian Apples took place some half-century ago. It is altogether probable that had not some enterprising fruit-growers of eastern Massachusetts imported that half-dozen varieties of Russian Apples we of the cold north might yet be left to our own extremely limited resources in the way of available tree-fruits.

As to Apples and Pears, I have endeavored to keep the readers of Garden and Forest informed of the progress which is being made in their study in northern New England. More recently I have been enabled to report something of parallel experiments with Plums and Cherries, and even in a slight degree with Apricots. Of this latter fruit, though the results with the Russian forms are not promising for northern New England, they have at least proved that there can be hardier races than those of western Europe; while later tests with sorts from Mongolia give strong hope that the area of their successful cultivation can be extended quite to the banks of the St. Lawrence River.

As already stated, north-western Europe is not unfamiliar with the native tree-fruits of Russia. Many of the Cherries recently imported into this country from Russia are grown now in Prussia, Poland and North Silesia. Yet their original home was, with slight doubt, eastern Europe and northern Asia. Some of these have even reached western Europe from Asia by the Cape of Good Hope, having been brought from Asiatic ports in Spanish and Portuguese ships. These varieties from both directions have met, and been found to be identical, in the gardens of Holland, for this is a small world after all. But the same or very similar varieties are reported as growing in a semi-wild state as escapes from gardens on all the bluff lands near the rivers of central Russia, while the most truly iron-clad, like the true Ostheim and the Bessarabian, are strictly Russian. Other so-called Ostheims—no doubt seedlings grown from mixed seed in Germany, are not hardy, or at least not "iron-clad." And as to the now pretty well-known Griotte du Nord, it will be seen by a reference to the Pomological Manual of the late W. R. Prince, pp. 146, that "the Dutch obtained this variety from Russia." Indeed, as Professor Budd remarks, it is a variety of the Ratifia family, found growing with the Brusseler Braune, on most of the roadsides of southern Russia. These are not, like many of the Russian Cherries, a dwarf family; for Professor Budd says that on the road-sides and division lines of estates in Russia he has seen the trees much larger than he has ever seen Early Richmond, or any of the Montmorencys, in this country. In Iowa, and, so far as they have fruited, here in Vermont, they prove to be great and continuous bearers, even in the most unfavorable seasons. I have fine trees of these sorts, nearly twenty feet high, which have proved quite as hardy as our wild Bird Cherry (Prunus Pennsylvanica). They are chiefly valuable for culinary uses, canning, and the making of "Ratifia," or what is commonly known as "Cherry Bounce." Still, the slight bitter which characterizes this family of Cherries, even when fully ripe, is agreeable to many; and some regard them as excellent dessert fruit. Even when gathered prematurely, no trace of bitterness remains after cooking. Professor Budd expresses the belief that in time these iron-clad Ratifia Cherries will be planted along the roadsides in America, as they are in Europe.

Another variety, known as Lutovka, represents a family of large-growing road-side trees, found all over south Russia. Where in the orchard such dwarfs as the little Spate Amarelle, Shadow Amarelle and Orloff, only six feet high, are seen in full fruit, Lutovka is at the same age a large round-topped tree. Its fruit exceeds the English Morello in size, is yellowish red in color, and would be called excellent for dessert use, even where the Heart Cherries can be grown. This family is so common in Russia that it is found as an escape from culture, yet it is only lately attracting the very favorable attention of growers in Poland, Bohemia and parts of north Germany.

The Asiatic Sweet Cherries, represented by Orel Sweet, are also strong growers, but not so upright as the Sweet Cherries of western Europe. A glance over the collection planted in 1883 in the grounds of the Iowa Agricultural College shows many varieties larger and stronger in growth than Richmond or Montmorency Ordinaire.

Of the dwarf sorts belonging strictly to Russia it is said that Orloff and Sklanka are proving continuous and heavy bearers. In my own grounds little trees three years set are bearing well, without regard for spring frosts in blooming time, and they mature their fruit as early as the Richmond. Sklanka is larger than Richmond, with a small pit, firm flesh, and is excellent for any use. Spate Amarelle, Shadow Amarelle, Large Long Late, Shubianka and Double Natle are continuous heavy bearers. Of some of these I have quite large trees, entirely unharmed by a cold that freezes mercury. There is no better fruit of this class for canning or preserving in sugar. They are incomparably better in quality for the table than any of the Morellos of western Europe; but as they are long in ripening, and double their size after beginning to color, their long exposure renders it necessary to protect the crop from birds by the use of netting. When fully black they are, to my taste, better than any of the Heart Cherries. Allow me to add that I am not propagating these fruits for sale.

Newport, Vt. *T. H. Hoskins.*

Winter Protection.

IN almost every garden there is sure to accumulate a number of plants which one comes to consider indispensable, although not hardy enough to be left outdoors during the winter in severe climates. The cellars of dwelling-houses are not always available for storage, being either too hot or too cold, and the question naturally occurs, What are we to do with them? It is not advisable to place such plants in a heated structure, as they need rest, and should not start to grow until they can be safely planted outdoors in spring. The one place of all others for all half-tender border-plants is the cold-frame, but the term is perhaps an unhappy one, in that we do not build a frame and invite the cold to enter in because it is a cold frame; on the contrary, the frames are well protected in winter by a lining of dry leaves, packed tight outside and kept in place by boards, and the sashes are covered with mats, and shutters to keep the mats dry. In this way we manage to keep out the frost, and rarely do we get the plants frozen. Lily-of-the-Valley for forcing, Astilbe, pot Roses, Freesias, Ixias, Ranunculus, double Anemones, Anemone fulgens, Pansies, stock-plants of Chrysanthemums, Violets, Hollyhocks, Foxgloves, Narcissi, Bulbocodiums, and, in fact, the whole of the winter-forcing bulbs may be safely stored in cold frames of this description. Chrysanthemums stored in this way produce excellent cuttings, stout and vigorous in May, just when they are wanted for growing on for pot-plants of medium size, or for large flowers. Freesias may be kept until March in this way, and will not have the weak habit of those brought on earlier in heat. All plants that have green tops must be exposed to the light on all favorable days and given air during sunshine, but bulbs and plants that have no top-growth may remain covered until required for use elsewhere.

There is a good deal of labor incidental to the management of cold frames in the covering up and uncovering daily, but this is offset by the little attention necessary in watering as in a greenhouse. Very little water is required in winter; the less the better, as long as the plants do not suffer, as one's greatest enemy is the tendency of such plants as Violets to damp-off; these must be carefully watched and decaying parts removed at once, or the plants will surely and rapidly die.

In the spring-time these frames can be utilized as hot-beds for the production of early vegetables, such as Cauliflower, Lettuce, Radishes, Beets and the raising of a host of tender seeds, such as Tomatoes, Celery, Zinnias, Asters, Stocks and many others. The use of the hot-bed was much better understood in the old days than it is now, but it is still the best of all ways to raise seeds and to grow on the young plants in a sturdy, vigorous way. We take out the soil to the required depth and place bricks under the corners of the frames to pre-

vent their settling down, and fill in with the fermenting material, covering this with soil about six inches deep. When the Lettuce-plants are set out Radishes are sown between the rows, and as the Lettuce is used from alternate rows, Cauliflowers are set in their places. Beets take long to mature, and are given a frame to themselves. In a word, there is no end to the ways in which cold frames can be utilized. We have sixty sashes, six by three feet each, all arranged on frames, three sashes on each. In this way they are easily moved from one place to another, and winter and summer these frames are always fully occupied. Mice are sometimes to be found with snug winter quarters in the bulb-frames, and a happy time they have until Felis domesticus comes on the scene. The moral is, examine the frames regularly, even if they are not opened daily.

South Lancaster, Mass. *E. O. Orpet.*

Flowers in the Conservatory.

DECEMBER is a "between time" and usually the dullest month of the year in the conservatory. The Chrysanthemum is gone, and the usual array of Dutch bulbs, forced roots and shrubs are yet to come. Freesia refracta alba, with its graceful cymose-scapes of lovely, sweet-scented tubular flowers, is at this time very common. It is one of the most useful bulbs to grow for any purpose, and competes for popular appreciation with the better-known Roman Hyacinths and Narcissus. Cyclamens, which were formerly not considered in season until spring, may be had in bloom early by a little forcing. Reinwardtia trigynia, a bright yellow sub-shrub belonging to the Flax family, is quite ornamental at this season, yellow being rather an unusual winter color.

The indispensable Jerusalem Cherry (Capsicum capsicastrum) is serviceable, as it bears a great deal of hard treatment. Species, varieties and hybrids of Hippeastrums are among the rarest and most beautiful of winter-flowering bulbs. Like most South American Amaryllidaceæ, they have a short season of growth and a long rest. One secret of success with these plants is, that they need quite a hot dry season of ripening to get them to bloom well. Dr. Masters is one of the earliest and best of the hybrids, many of which, unfortunately, are held at high prices. There are, however, a few of the types, notably H. equestre, H. Johnsoni, H. psittacinum and H. vittata, which are reasonably cheap and handsome enough for any one. Hippeastrums will bloom well for several seasons in one pot, provided a little fertilizer be given during their growing season.

The practice of growing Mignonette in pots for winter use is not carried to such perfection in this country as in England. Without the care necessary to grow specimens, a few plants in six-inch pots, carrying five to six spikes of flowers, will remain in bloom a long time, giving a continuous, delicate and agreeable odor. Lachenalias are coming along; why they are so seldom grown is a mystery, unless it be the exorbitant prices asked for some of the kinds, as L. Nelsoni. Lachenalias are very easy to grow, and multiply rapidly if given generous treatment. Last spring I bought three packets of seed at twenty-five cents each, and have now over three hundred seedlings, several of which, I noticed the other day, are showing flowering spikes; next year they will be flowering bulbs.

At Mr. H. H. Hunnewell's place I noticed a neat little Polyantha Rose, named Mathilde Soupert, nicely in bloom in a cold frame. During the winter, when cultivating cuttings of Mignonette and White Pet, varieties of this class, I was struck with their free-flowering qualities; small plants grew and bloomed on every inch of growth, and I have often thought since that they might be effectively used for the decoration of conservatories in winter.

Statice Halfordii is an uncommon tender Thrift, bearing large compound panicles of bright blue flowers, which last a long time in perfection. The young plants are specially beautiful, old plants, unfortunately, becoming unsightly through the loss of the lower leaves, a condition unavoidable in a sub-shrub.

The winter-blooming Begonias are universal favorites. B. Bismarcki, a garden hybrid of doubtful origin, but evidently related to B. rubra, is one of the very best. It is always in bloom, winter and summer, and bears a large truss of lovely pink flowers. B. semperflorens rosea-gigantea is another useful variety for any purpose. It produces handsome cymes of red-rose flowers, excellent for bouquets. B. incarnata, B. Socratana, B. Verschaffelti and B. Scharffiana are among other useful kinds.

French Cannas have lately become popular for winter decoration. After a short season of rest they will start up again and bloom and increase in size all through the winter. These notes presuppose the careful and appropriate use of Palms, Ferns and other good-foliaged plants.

Wellesley, Mass. *T. D. H.*

Orchid Notes.

A LARGE plant of Epidendrum cochleatum in bloom is an interesting, and, in its own way, a beautiful, object. The oblong, compressed pseudo-bulbs are from four to five inches high, and they bear two oblong-lanceolate leaves of rich green color, and somewhat leathery texture at the apex. The leaves are from nine to twelve inches in length, and the erect terminal racemes a trifle shorter. Six or seven flowers are closely arranged at the top of each peduncle, and the drooping sepals and petals are linear-lanceolate and of a whitish or very pale green shade. The lip, however, is the most characteristic portion of the plant, being erect, an inch in diameter, shaped like a cockle-shell, and of a rich black-purple color, with a small area of green at base and apex. E. cochleatum is not at all common in cultivation, but it well deserves the attention of gardeners. It should be grown in an intermediate temperature, with the roots in rough peat, sphagnum. Plenty of water and drainage is needed during the growing season. The water should be almost totally withheld for at least two months after flowering, and then the plant may be repotted, if necessary, and again prompted to grow by the application of water. This plant is common in Central America and the West Indies, and it is also said to occur sparingly on the coast of Florida.

Epidendrum nocturnum, the night-scented Epidendrum, is a widely different plant, also in flower now. This species was one of the first epiphytal Orchids cultivated in Europe, having been introduced from Martinique in 1816. The much-compressed stems are from twelve to eighteen inches high, bearing several oblong leaves, from three to four inches in length, on the upper portion. It is rare that more than one flower appears at the apex of a single stem at the same time, but they are produced in rapid succession for months together. The sepals and petals are of a greenish or light bronzy yellow color, about two inches in length, sometimes longer, linear-lanceolate, with the edges recurved, so as to give them a cylindrical appearance. The lip is pure white, with a bright yellow surface at the base; three-lobed, the lateral lobes large and spreading, the central one narrow, long and pointed. The individual flowers are borne on long slender pedicels, and they last from three to four weeks on the plant. Their fragrance is strong and agreeable at night, but scarcely perceptible during the day. The plant should be grown in a basket or on a block, with a little rough peat-fibre about the roots. An intermediate house suits it best, and it likes plenty of light. Water should be given freely during the growing period, and a very small quantity will suffice when the plant is flowering or at rest.

Cambridge, Mass. *M. Barker.*

Notes from the Harvard Botanic Garden.

ALPINIA NUTANS.—In the general appearance of its stems and foliage this plant resembles a tall-growing Canna. It is from ten to twelve feet high, quite rigid and erect. The oblong lanceolate leaves of deep green, with paler midrib, are about two feet in length and six inches wide, the long sheathing petioles circling the stem from the base of the blade. The tubular flowers, each of which measures two inches in length by one and a half inches in perpendicular diameter at the mouth, and one inch horizontally, are borne in large pendulous racemes eighteen inches long. There are in each raceme from thirty to forty such flowers, the outer parts of which are pure white, tipped with bright rose. The central portion or lip is quite large in comparison, and very beautiful. The sides at the base are incurved, covering the conspicuous column-like arrangement of reproductive organs, and the margin fringed in front. The ground-color is a rich orange-yellow, with a profusion of deep crimson markings in the centre. The flower-buds are extremely pretty even before they expand. They are of ovate, oblong form, the color being pure waxy white, tipped rose. A. nutans is an excellent plant for large conservatories and Palm-houses. The foliage is pleasing at all times, and the flowers appear at various seasons, the racemes retaining their attractiveness about two months. Small specimens of the plant have little or no decorative value, but it develops rapidly. Its growth should be hastened until it is of sufficient size to fill a large tub with roots, and then it may be expected to flower freely. Large specimens require repotting about once in three years, and for these a small quantity of lumpy charcoal should

be added to the compost. A large amount of water is required when the plant is growing freely. It is a native of China and the East Indies, having been introduced in 1792, and is easily propagated by dividing the roots.

Combretum purpureum.—Some of the Combretums are pretty generally cultivated in European gardens, and they are very ornamental plants for the warm end of any conservatory. Those in search of plants choice and rare will find much to please them in the best of the Combretums, and they cannot do better than give them a trial. C. purpureum, however, is rarely seen even in the horticultural establishments across the ocean, though it is a plant of decided merit. It is a native of Madagascar, said to be commonly cultivated as an ornamental vine in the Mauritius, and, although introduced from the British colony in 1818, it has never become popular. It is of shrubby character, the free-rambling branches being densely clad with opposite, elliptical or slightly obovate leaves of deep green color, and from five to six inches in length, the petioles short. The flowers are loosely arranged in terminal, tapering panicles from twelve to eighteen inches long, and as many across at the widest part. The spreading, five-parted bright crimson corolla is about half an inch in diameter, and the filaments, of similar color, are erect, three-fourths of an inch long, and disposed in brush-like clusters. Our plant bloomed quite freely during the summer months, and is now again on the eve of making another display of flowers but little inferior to the first. It is grown in a pot, the branches trained to wires stretched along the sunniest side of the Palm-house, where they are always fully exposed to light and sunshine. They require a free supply of water in summer, when a thorough drenching with liquid-manure about once a week will also be found beneficial; but the roots should be kept rather on the dry side at other seasons. Cuttings of firm young wood, inserted in sand and placed in a close propagating structure, root freely in summer, and established plants should be so pruned and trained in winter that all the following season's growth may have equal access of light.

Cambridge, Mass. *M. Barker.*

Correspondence.

A Spurious Elæagnus longipes.

To the Editor of Garden and Forest:

Sir,—What was said in your issue of November 9th about Elæagnus umbellata clears up a mystery of my own garden. That fascinating description of E. longipes which appeared in Garden and Forest December 12, 1888, made me long to possess myself of a specimen. When I received my shrub from the dealer it seemed to answer the description fairly well, though not precisely. This year it fruited, but instead of the oblong juicy berries, "half an inch or more long," I got a crop of puckery little fruit no larger than choke-cherries, and much like them in shape. Neither did they ripen in July, but in late October.

In the light of your recent explanation all is plain. It is clear that the nurserymen have been sending out E. umbellata for E. longipes. As there are quite likely to be other disappointed ones besides Mrs. Dandridge and myself, I think it might be well if the editor would kindly point out in detail the differences between these two Japanese shrubs. Is E. umbellatus really worth the ground it occupies?

Marblehead, Mass. *N. A. Lindsey.*

[Elæagnus longipes was first described by Dr. Asa Gray in 1859 from the botanical collections brought home from Japan by the famous Wilkes Expedition. In cultivation at the Arnold Arboretum it is a perfectly hardy bushy shrub, and at six or eight feet in height it appears to be fully developed, although in Japan, where it is often cultivated for its fruit, it assumes the habit and attains the size of a small tree eighteen to twenty feet in height. The stems and branches are dark gray or dark reddish brown and minutely scaly or dotted, the ripe annual growths being lighter-colored. The leaves are green above, silvery beneath, and noticeably sprinkled with dark-colored dots, more numerous on some leaves than others. They are without teeth, and are variable in shape on different plants; sometimes quite long, and not more than a third as wide, most usually oval or oblong, blunt-pointed and two inches or less in length, or occasionally so broad as to appear almost circular. The flowers are generally pretty fully expanded by the middle of May, and are borne singly or several together in the axil of each lower leaf of the new growth of the season. They are yellowish within, but silvery and roughly scurfy on the outside, and often dark-dotted like the under side of the leaves. At blossoming time the flower-stalks are hardly half an inch in length, but as the fruit develops the stalks lengthen, until at maturity, in early July, they may average about an inch in length, being a good deal thicker nearest the fruit than at the insertion on the branch. The bright red or orange-colored fruit is oval in shape, blunt or slightly flattened at the ends, the skin thin and covered thickly with minute silvery white dots. The juicy and luscious-looking fruit, though edible and palatable to some people, leaves a disagreeable taste in the mouth, a quality which has been found even more pronounced in fruit that has been cooked.

Under the name of Elæagnus longipes some American nurserymen have sold large numbers of an entirely different plant, a species of wide distribution in Japan and China and other parts of Asia, and apparently one of the hardiest and the most northerly in its natural habitat. This is known as E. umbellata, under which name it is properly distributed by some of our nurseries. This may be distinguished from E. longipes by its lighter-colored bark, silvery gray, instead of reddish brown, young branchlets, a larger proportion of the branchlets being inclined to become thorns—hence the name, "Silver Thorn," sometimes given. The leaves are of a lighter green color, narrower and more rarely marked by dark dots on the under side than those of E. longipes. The flowers are white on the inner, densely silvery scurfy on the outer side. They are fragrant, and are often produced in clusters like little umbels. The flower-stalks or pedicels are quite short, and when the fruit arrives at maturity the stalks do not average more than a quarter of an inch in length. The fruit itself is usually red or amber-colored, small, round or oval in shape, commonly about a quarter of an inch long, sometimes less, but on some plants as much as three-eighths of an inch in length. It is often much more thickly covered with silvery dots than the fruit of E. longipes, and when fully ripe it has, on some plants, at least, quite an agreeable flavor, which improves the longer it remains on the branches. Sometimes it has little flavor or juiciness, and all the fruit for a good while after it has changed color is rather disagreeable and puckery. On different plants it appears to be very variable in time of ripening, and it persists for a long time in a fresh condition. The plant is in good bloom at the Arnold Arboretum about the middle of June, and the fruit may begin to show ripening colors by the middle of August, some plants keeping their fruit until late in November.

This shrub is larger, more open and straggling and more thorny than E. longipes. E. parvifolia is another name under which E. umbellata is sometimes found. It appears to have been given to a form with the larger, earlier-ripening fruit, but the plant has been found so very variable in different regions that the name of E. parvifolia is now generally regarded as synonymous with E. umbellata. This species will bear clipping and form a good hedge. E. longipes is sometimes to be recognized under the names of E. crispa, E. edulis and E. rotundifolia, given at various times by gardeners. The points of chief difference to be noted in distinguishing these two species of Elæagnus are the generally dark aspect of the first, as a whole, the other being much lighter and more silvery; the dark twigs and buds of the first and the usually silvery twigs and buds of the latter; the marked difference in the time of flowering and ripening of fruit; the difference in size of the fruit and the remarkable difference in the length of the fruit-stalks.—Ed.]

Flowers at Wellesley.

To the Editor of Garden and Forest:

Sir,—There are just now many interesting things in the greenhouses of H. H. Hunnewell, Esq., besides forced bulbous plants, such as Roman Hyacinths and Narcissi, which are already in full bloom and fragrance. The Cyclamens are full

of large flowers in varied colors, and there are many specimens of the Lobster Cactus (Epiphyllum truncatum) completely draped in soft rose-purple. The free-flowering Bouvardias are grown in generous quantity, and there are few greenhouse plants of such easy culture so generally useful in winter. They are very graceful and effective when in full bloom, and the flowers last well when cut. Specimens of good size may be obtained in a few months by inserting the cuttings in sandy soil and placing them in a hot-bed in early spring. The plants should be grown on in pots, plunged out-of-doors in summer, and removed to their final quarters in September.

The Calla Lily (Richardia Æthiopica) spathes are numerous on vigorous plants, and the gardener, Mr. Harris, called my attention to a variety named Grandiflora, in which the fragrance of the flowers is particularly sweet and strong. The Little Gem variety is also grown, there being a number of plants in promising condition, though Mr. Harris is of opinion that it will in usefulness prove far inferior to the well-known type. A large standard bush of an Abutilon, with light yellow, bell-shaped flowers, is rich in the luxuriance of its foliage and in quantity of bloom.

Solanum capsicastrum is grown on account of its ornamental fruits, which are as large as the white fruits of the Snowberry (Symphoricarpus racemosus), globular in form, bright red and glossy. There are also some specimens of Solanum ciliatum, a spiny plant with large Oak-like leaves and bright red fruits about the size of walnuts. Both these plants are highly effective and very desirable for a cool greenhouse.

A large plant of Pleroma macrantha in a cool conservatory was a grand sight, with its rich purple blossoms, a short time ago, and a few flowers still remain. Were the plant in a somewhat warmer house it would bloom more or less freely all winter. Anthurium Scherzerianum's twisted spathes of vivid crimson are very showy, and produced in fair quantity on a medium-sized plant. There are still a few of the beautiful pinkish bracts on Bougainvillea glabra, a summer-flowering climber of rare excellence, and the large scarlet bracts of Euphorbia pulcherrima make a bold mass of cheering color. Bignonia venusta is grown in a warm house, the old stems covering a large area of the roof, and the young branches, laden with opening flowers, hang down in streamers of orange and green.

The numerous and healthful foliage-plants are being slowly crowded out by the introductions of Orchids. Mr. Hunnewell's collection of the latter plants gives every indication of speedily becoming one of the most important in this country, and they are in most competent hands, judging from the superb growth they have made during the past season. The Phalænopsis are now showing some extra strong scapes, and the plants of this group are in a condition rarely equaled. The following, among the plants in flower, are especially noticeable as showing the highest state of cultural development: Catasetum saccatum, Cattleya bicolor, C. Gigas, C. Harrisii, C. maxima, Cypripedium callosum, C. Dominianum, C. Spicerianum (several plants of this species bearing two or three flowers to a scape), Dendrobium Dearei, D. formosum, D. Phalænopsis, Lælia pumila and its variety præstans, Odontoglossum Harryanum, O. grande, Vanda Kimballiana and Zygopetalum Mackayi.

Boston, Mass. *Casual.*

The Use of Cultural Directions.

To the Editor of GARDEN AND FOREST:

Sir,—The desire expressed by a correspondent for information which is adapted particularly to American gardens is a very natural one, and is probably the outcome of the idea that foreign practice differs in a great degree from our own, as it often does, just as garden practice in California must often differ from that of Massachusetts. One who undertook to give advice from the American standpoint would be confronted at once with conditions as diverse as can be imagined, since the United States offers about every known variety of climate, exposure and soil. Latitude furnishes few indications, as isothermal lines do not follow geographical abstractions. And temperature is only one factor in cultivation. What is the average moisture? Is it well distributed, or does it occur all in a given season? Then follow questions of fertility and the mechanical constitution of soils at different seasons, and many other problems of equal moment. In fact, any one who attempts to cultivate the smallest portion of the earth's surface soon discovers many things not mentioned in any cultural manual, and he finds that his operations must in many cases be tentative. Cultural notes are often very useful, but at best are mere relations of personal experience, and whether they are made in England or New Jersey they must be modified as the intelligence of the cultivator decides.

The cultivator of the hardy garden, to consider a definite style of garden, is ever at the mercy of the elements, and the interest in the hardy plants is heightened by the never-ending struggle with nature. The popular idea of a hardy garden is that it is one where everything once planted goes on vigorously from year to year and from strength to strength with little or no attention. This is quite true of some strong-growing things, as Phloxes, Pæonies, Funkias, a few Sunflowers, etc., but usually, even with these, when unattended to, there comes a time when nature has her revenges. But these plants are of moderate interest beside the numerous hardy species which will naturally be sought for in a good hardy garden, and be a source of more or less perplexed pleasure to the grower. In late winter and early spring, if one watches the fields, he will discover that nature is apparently engaged with frost and sun-warmth in destroying all traces of vegetation. With a heave here and a heave there the mighty but quiet frost lifts out of the soil every root not safely anchored. It is only the great abundance of plants and seed which prevents the entire extermination of many species. If this is true among native plants, how much greater would be the destruction of exotic plants, which are at a further disadvantage by their small numbers in comparison with the native kinds?

The winter care of a hardy garden may seem the further end of its culture, but it is really one of the things to be considered in first planting. The careful, observing gardener will notice that even a very small garden has considerable diversity, if not of soil, at least, of warmth and natural drainage, and will always have it mapped in his mind with situations which seem suitable for plants of different constitutions. By observing the disappearance of snows from the garden one can gain a very good idea as to where it may be best to place certain classes of plants. Where the snow lies longest is, of course, the place to plant such things as are apt to start too early in the year, or are easily, from their nature, thrown out of the ground by frequent freezings and thawings. Where the snow disappears promptly rapid changes are apt to be the order of the season, and no exposed crowns or perennial leaves are safe, though if sheltered well from the north such a place may make a good early garden for bulbous plants. It is attention to seemingly small details and careful observation which makes the garden a success and a pleasure. How to make plants grow is knowledge not given to man, but if we will plant them carefully, attend to their wants faithfully and intelligently they will often grow for us.

Elizabeth, N. J. *G.*

Horticultural Education.

To the Editor of GARDEN AND FOREST:

Sir,—Your editorial expression upon horticultural education is encouraging. I am glad that you appreciate the fact that a farmer's boy or girl may be greatly benefited by even a short one-term course of lectures, reading or practice. Our own institution, in common with others, now offers such a short course, and we have for some time considered the feasibility of instruction by correspondence, a plan which seems to me to be capable of good results. As you say, these courses cannot make finished gardeners, and, for myself, I do not look upon the mere information or instruction which the courses give as their chief value. The important result is inspiration. Kindle the spirit of enthusiasm in a youth; let him know what to look for; show him that all the simple amenities and ambitions of life are possible on the farm. When he once grasps this broader horizon of life, the farm is a new sphere, and citizenship has new hopes and responsibilities. Our people must be citizens as well as good farmers and good mechanics. I imagine that all the agricultural colleges which give short or special courses find that these are feeders for the long or general course. Our senior class is usually as large as the freshman class; sometimes larger. This shows that there is a contagion about education which it is difficult to resist. We all want to extend the college, university, experiment station; in short, the education spirit. Then we want all those who desire to take definite and prolonged instruction. We cannot yet hope to make every farmer a college graduate, but we hope that every one in the land shall feel something of the inspiration which comes from the newer and broader life.

Cornell University. *L. H. Bailey.*

Notes.

Mr. W. J. Gordon, who died a fortnight ago in Cleveland, provided in his will that his extensive and beautiful pleasure-

ground, known as Gordon Park, should be given to the city of Cleveland under certain conditions. Mr. Gordon was a great lover of plants and flowers, and during his life his pleasure-grounds were freely open to the public on stated days.

For the purpose of awakening and increasing the interest in aquatic plants, and in Water Lilies particularly, Mr. W. W. Lee, of Northampton, Massachusetts, offers to send to any subscriber of GARDEN AND FOREST, photographs of Nymphæa dentata, N. gigantea and Victoria Regia Randi, all natural size, at cost and expense of sending, and also a large photograph of a pond containing a Victoria Regia and many tender aquatic plants in flower.

A writer in the *Gardeners' Magazine* describes an old tree of the Gloire de Dijon Rose in the garden at Blake House, near Taunton, England, which was budded on a brier-stock thirty-two years ago. The stem at eighteen inches from the ground is ten inches in circumference, and it is of standard form, five feet six inches high. The branches have a circumference of twenty-four feet, and the vigorous plant still blooms abundantly until late in the autumn, and shows no evidence of exhaustion.

At the Chrysanthemum Show in San Francisco last month, one of the features was a "petal-guessing contest," for which a premium of $50.00 was offered by the Sherwood Hall Nursery Company. A large bloom of the variety known as "Prince" was set up on a black mounting so that its outlines could be distinctly seen, and visitors crowded around to try for the prize. More than 6,000 votes were cast, and the bloom was estimated to contain all the way from 120 to 10,000 florets. The actual number was 512.

Rev. Edward Everett Hale thinks that much of the eager talk in English prose and poetry about the beauty of hedge-row flowers is due to the fact that the rows are so high that one who walks or even rides between them in a carriage can see nothing else. In a guide-book made for pedestrians, travelers are especially directed in one place to look out for a gate, through which they can catch a glorious view of the sea, which, for two miles or more on either side, is screened from view by the high hedge.

M. H. Correvon, Director of the Jardin Alpin d'Acclimatation, Geneva, writes to the *Gardeners' Chronicle* that he has received from the mountainous regions of Servia and Montenegro several interesting plants which have not been introduced into cultivation. One of them is Chrysanthemum cinerariæfolium, which has large and beautiful flowers and long-stalked leaves, double-lobed. Another is Alyssum repens, from Mount Durmitor, where it was collected at an elevation of 6,000 feet. It is a dwarf-spreading species, with yellow flowers, which surpass in beauty those of most other Alyssums. From the southern Caucasus, at an altitude of 2,000 feet, comes a beautiful Foxglove, Digitalis ciliata, which resembles D. grandiflora somewhat, and is an erect, graceful plant, which flowers freely from June to September.

It is said that the portions of Russia which are now stricken with famine are in the region of the black soil, which has always been considered one of the most productive portions of Europe. If this is true, the evil is, without doubt, largely the result of the same wasteful cultivation which has been going on in some of our own prairie soils. But, perhaps, the deforesting of the country is responsible for some of the difficulty. The destruction of the forests is spoken of with great positiveness as the cause of the famine by many observers, and although it is the fashion to exaggerate the influence of forests on climate, or, at least, to speak of their influence without knowledge, nevertheless it is quite probable that the forest which once protected the fields from hot winds in summer, and from equally destructive winds in winter, may have done much to mitigate what would otherwise be a rigorous climate.

Dr. Hoskins sends us a photograph of a Willow-tree which stands in Waterbury Centre, Vermont, near the base of Mount Hunger, with a trunk measuring twenty-four and a half feet in circumference and a symmetrical top which shades an eighth of an acre of ground. One who knows the early history of the Willow testifies that in 1840 it was a tree something like six inches in diameter, which had grown from a walking-stick driven into the ground a few years before by some children. In that year it was cut down deep into the ground in the hope of killing it, but it started a new growth, and has reached its present dimensions in fifty years. The rapid growth of the Willow in favorable localities is well known, and Dr. Hoskins writes of another near his home which sprang from a cane carried by a returning soldier in 1866, and thrust into the soil in his door-yard. It is now more than four feet in diameter, with an immense top, and bids fair, at an equal age, to reach the dimensions of the one before spoken of.

The unpacking, sorting, repacking and forwarding to all parts of the world of dried figs occupies more than half of the laboring population of Smyrna during five or six months of the year. Consequently the arrival of the first consignment of the fruit from the orchards is a great popular event, called "The Feast of the Figs." This year the harvest was magnificent, and a very joyous manifestation took place at the railway-station when the first train arrived, with its cars wreathed with garlands and its locomotive covered with flags. The barrels were quickly unloaded and placed on camels decorated with ribbons and flowers, and the procession started for the emporium, followed by a great crowd dancing to the sounds of music, and the evening was given up to concerts, balls and rejoicings.

The second part of Mr. Romeyn B. Hough's novel publication, *American Woods*, is quite as valuable as Part I., and we are glad to know that Parts III. and IV., each containing sections of twenty-five species, will be issued before the close of the year. These wood-sections are beautifully mounted, and they display the soft tints and delicate lines of the grain in a very interesting way. The slices are so thin that the light passing through them reveals many points in the structure of the wood which would otherwise escape notice, and as they are cut in three directions, across the grain and with it, and show both the heart-wood and sap-wood, they are very complete and instructive. With the specimens comes a pamphlet of text containing much accurate botanical and general information in reference to the trees. The collection ought to be in every public school and library in the country, and it would be an ornament to any parlor-table. Specimens of the woods are also mounted for use in stereopticons in slides of standard size, which show a circular field two and three-quarters inches in diameter. Mr. Hough's address is Lowville, New York.

Mr. L. Eugene Mouline, of the Department of Ardèche, in France, has invented a plan for drying potatoes. They are first crushed, after which the water is squeezed out. The compressed pulp is then separated into pieces and put into an oven, moderately warmed, where it remains until it is thoroughly dry and has taken on a light yellow tint. The temperature is high enough to impart an agreeable flavor to the product, but not high enough to completely transform the starch into dextrine. This new article of commerce, which can be kept an indefinite length of time, has been called torrefied potato-pulp. It can be used in a raw state for fattening domestic animals, and can be converted into a purée for human food by boiling water. It is also ground and made into a light yellow flour, which is mixed with wheat or rye flour and baked into a bread, which is very digestible on account of the partial conversion of the starch into dextrine. According to *La Nature*, the inventor hopes that this flour will be found advantageous from an economic point of view, and that its introduction will cause an increase in the cultivation of potatoes, which will be sufficient during years of drought to make up for a deficiency in the crops of cereals.

An act was passed at the last session of the Ontario Legislature which forbids the spraying or sprinkling of fruit-trees while they are in bloom with any mixture containing Paris green or other substances poisonous or injurious to bees. This legislation is based on the belief that bees are important factors in the production of fruit by helping on the process of fertilization, and that spraying the fruit-trees while they are in blossom will work injury to the fruit-growers as well as the bee-keepers, since it has been observed that since the introduction of the practice of spraying during the time that orchards are in bloom large quantities of bees have perished, presumably of poison. It is held, too, by some men, that honey produced from blossoms which have been sprayed with insecticides is a dangerous article of food. It is also argued that it is a waste of material and labor as well as of fruit to spray the trees while they are in blossom, since the plum curculio is not likely to be present to any extent until the fruit is set and the coddling moth also deposits its eggs in the blossom end of the young apple just after the fruit is set. That portion of the pistil upon which the pollen falls is exceedingly tender and sensitive, and it is held by some authorities that the application of such substances as Paris green injures it to so great an extent that the process of fertilization is affected and the development of the fruit checked. A bulletin just issued by Professor Panton, of the Ontario Agricultural College, upholds the law as in accordance with the teaching of science, and hopes that efforts will be made to have it thoroughly enforced.